Utilizing Solid-State Bit Reversal Mechanisms to Reduce CPU Load in X-Band RADAR Systems

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Introduction

Although this author considers X-Band RADAR to be obsolete as a detection mechanism, researchers continue to attempt to solve the problem of excessive heat in wide-bandgap semiconductors used for the frequency-switching function of the X-Band RADARs. X-Band RADARs utilize rapid frequency-switching as a jamming-prevention mechanism. As the “valid” frequencies must be both rotated and noted, the systems must “remember” which of the randomized frequencies are legitimate and which should be treated as jamming-related noise.

Abstract

A great deal of the processor load associated with this frequency-switching requirement may be eliminated by utilizing solid-state electron re-ordering as described in 3 August 2023.

In accordance with the concept of 3 August 2023, individual electrons or even whole waves may be caused to advance ahead of others within a closed-loop system wherein electrons follow a track wherein the walls of that track alternate between having a positive electrical charge of or a neutral charge throughout alternating lengths of the outer boundary of the track in order to force electrons to follow a more circuitous path through the circuit. When a bit sequence inversion is desired, signal can be routed through such sequential inverters selectively according to a pre-defined set of rules. As the inverters are and must be solid-state in order to provide a benefit, it is a portion of the energy in the signal, itself, which temporarily nullifies the effects of the positively-charged portion of the mechanism, causing electrons in the rear to, unaffected by the mechanism, to follow a more direct path, thereby surpassing the electrons which were originally in the lead position. The positively charged zones temporarily absorb some of the energy and, once in the charged state, do not have the same electron-path altering effects, making solid-state inversion possible.

The result is a slightly weaker signal, but a greatly diminished requirement for CPU time when it comes to alternating and denoting changes to valid frequencies. This, in turn, greatly reduces the amount of heat generated.

Conclusion

While such an electron-sequence inversion may occur naturally in the human brain and may have neuromorphic computing application, it would appear that it would have application in rapid frequency-switching for X-Band RADARs, as well.

Through the creative usage of combinations of path-elongating solid-state bit inverters (inverting everything from simple bit pairs to more complex sequences of waves,) a great many signal combinations can be generated using less processing power whilst preserving the ability of the RADAR operator to validate RADAR returns in a contested environment.